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Association it was moved and carried that an invitation be extended to these organizations.

Dr. Minot reported from the subcommittee upon the affiliation of certain of the medical societies that the invitation to affiliate was sent out to several societies, but that sufficient time had not elapsed to allow these societies to take action.

Dr. Lee reported that the Council of the American Physiological Society had resolved to report favorably upon the proposition of the Association as a whole, but that action by the Society cannot be taken until its next meeting.

An appropriation of \$25 or so much thereof as may prove necessary was made for the purpose of sharing in the expense attending the reception of Lord Kelvin to be held by several national scientific organizations in New York City on April 21.

A letter was read from the Librarian of the Manchester (N. H.) Institute of Arts and Sciences, stating that their library had been destroyed by fire last January, and, on motion, the Permanent Secretary was directed to present to the Institute as full a set of the Proceedings of the Association as should prove practicable.

A letter from Dr. Franz Boas relating to a proposed 'Association of American Anthropologists' was read, in which he asked the opinion of the Council of the Association concerning the possibility of a practical substitution of this national society for Section H of the American Association, all members of the new society becoming members of the American Association, the society to have the privilege of levying additional assessments of its own. Some discussions ensued and a motion by Mr. Gilbert was finally adopted to establish a committee on the relations of the A. A. A. S. to other scientific organizations and that the proposition from Dr. Boas be referred to this committee. It was further

moved and carried that the President of the Association be made a member of the committee.

The following resolution was read by Mr. Cattell:

Resolved, That the Permanent Secretary be authorized to collect the dues of members of societies affiliated with the Association if requested to do so by any of those societies.

Dr. Stiles moved that the Committee on Convocation Week be requested to take into consideration the advisability of addressing officials in charge of Government scientific bureaus in an effort to secure action which will result in the detail of scientific men in the employment of the Government to attend scientific meetings held during Convocation Week without prejudice to their annual leaves of absence, thus accomplishing for this class of workers what the committee has been able to secure through the different universities for the teachers in the higher educational institutions.

The Secretary-elect of Section I, Professor W. F. Wilcox, having resigned through press of work, on motion of Mr. Hyde, Frank R. Rutter, of Washington, D. C., was elected Secretary of Section I.

SCIENTIFIC BOOKS.

THE DUTCH EXPEDITION TO THE MALAY ARCHIPELAGO.

Siboga-Expedition, Introduction et Description de l'Expédition. Par MAX WEBER, Monographie I.

This is the first of a series of sixty-five monographs which are to appear from time to time as the results of the cruise of the *Siboga* through the Malay Archipelago. One need hardly add that such a series, under the authorship of many of the best known continental specialists, will prove an important complement, if not a rival, to the reports of the *Challenger*.

The introductory monograph by Professor Max Weber, director of the expedition, gives a clear outline of the proposed work, a historical summary of the researches relating to this region and a condensed journal of the cruise during its year of collecting.

Great interest in the biology of their East Indies has always been shown by the Dutch, and the rich tropical fauna and flora of this region have already been examined at first hand, although in but a preliminary way, by many of their best observers. The present expedition can, therefore, be looked upon as the logical outcome of a cumulative interest. Not long since a society was formed for the 'Encouragement of Explorations in the Colonial Possessions of the Netherlands,' and it was at the instance of this society, through the efforts of Professor Hubrecht, of Utrecht, and other leading zoologists, that the Dutch government lent its aid to the undertaking. This materialized in the loan of an admirably equipped war vessel, the *Siboga*, for the purpose of a general exploration of the marine fauna of the Dutch East Indies. Among zoologists generally, it is well known that the *Siboga* started on its cruise under exceptionally favorable auspices; no vessel was better equipped for zoological collecting, and its naval personnel, from Captain Tydeman down, was selected with extreme care—the latter feature almost as important to the staff of naturalists as the former. The vessel started on its cruise in March, 1899, returning to Java without mishap just a year later. Over three hundred dredging stations were recorded at points well scattered throughout the archipelago. The itinerary was a long one; the vessel passed first along the southern row of islands as far as Timor, thence northerly through the Strait of Makassar, as far as the Sulu group in the Philippines; thence back to Celebes, then again northerly to the neighborhood of the Philippine Island, Mindanao; thence southerly through the Molucca passage, and among the islands of the sea of Ceram, as far as the coast of New Guinea; thence through the sea of Banda, and among the southern group, Timor, Flores, Lombok, back to Java. The

present monograph gives, although in a concise form, an idea of the fauna of the little-studied deep and shallow waters of the archipelago, and of the wealth of material which now has been distributed among the specialists who are to report upon the collections. Hardly of less interest are the extensive researches undertaken by Captain Tydeman and the party in the hydrography of this region.

It is a difficult task for the reviewer to select the most important of the points brought out in the first monograph. One may pick out at random these: There is evidence that the famous 'Wallace's line' between Borneo and Celebes, is far less distinct than formerly believed, and indeed of minor importance in the matter of the distribution of marine forms; in this regard we note that the narrow strait between Bali and Lombok through which this line passes is much shallower than heretofore believed, practically within the one hundred fathom mark.

Important too is the discovery of actual barriers separating the deep waters, or seas of the archipelago from the neighboring oceans, barriers which had long been conjectured to account for the fact that the deep waters of the archipelago, *i. e.*, those greater than 1,600 meters, are of uniform temperature (about 3 degrees C.), while those of adjacent oceans become colder as the depth increases. The present memoir contains many interesting biological notes. We may cite, as examples, the reference to the Palolo worm, whose extraordinarily regular and sudden mode of occurrence has so long puzzled zoologists; the method of sailing by the sword fish, *Histiophorus*; the relations of *Lithothamnion* colonies; curious aboriginal methods of fishing; notes on shallow water phosphorescent fishes; measurement (in candle power) of the flashes of the phosphorescent fish, *Photoblepharon*; living conditions of glass sponges; notes on *Coccospheara*, much discussed of deep-sea expeditions—these are shown to be plants, their chromatophores and division having been studied in living material by Mme. Weber.

Among geological notes we find that Mesozoic deposits, hitherto known only in and near

Java, are continued throughout a number of the easterly islands: also that in deep water and distant from shore, land remains such as fruit and leaves of palms are found in dredgings, confirming from this region the observations of Alexander Agassiz on the *Blake*.

BASHFORD DEAN.

Die Reizleitung und reizleitenden Strukturen bei den Pflanzen. By B. NĚMEC. Jena, G. Fisher. 1901. Pp. 153; pl. 2. Price, Mk. 7.

Nowadays it is to be expected that any theory developed in connection with the phenomena of animal life will quickly be applied to investigation in the action of plants and *vice versa*. Witness the well-known exploitation of heliotropic phenomena in animals after their elaboration in plants. Since the discovery of the fibrillar structure in the nervous system of animals and the development of the neuron theory have shed so much light upon the propagation of impulses in animals, it was to be expected that similar investigations should be made upon plants. This has been done by Němec and the results are embodied in a book of considerable size.

Though he gave some attention to geotropic and other stimuli, Němec studied chiefly the propagation of the stimulus caused by wounding, because this manifests itself by a notable disturbance in the structure of the cell. The protoplasm of cells adjacent to the wound aggregates upon the side of the cell next to it, whither also the nucleus migrates. This disturbance spreads in all directions at a definite rate (in the root of onion about 1.25 mm. lengthwise in the first fifteen minutes), and recovery follows shortly. The propagation is most rapid in the longitudinal axis. Němec sought a structural basis for this difference and believes that he has found it in protoplasmic strands or fibrils, which are readily demonstrable in certain cells, particularly those of the plerome. These strands run lengthwise from one end of the cell to the other and are resolvable, with proper staining and magnification, into fibrils, each of which is surrounded by a distinct sheath. In the center of the cell the strands are often large

and distinct, but near the ends they spread out into a brush of fibrils, which reach the wall but do not penetrate it. According to Němec, propagation of the impulse takes place along these fibrils, becoming general and diffuse in the protoplasm at the ends of the cells, and passing from one cell to another by way of the minute general protoplasmic connections, which by analogy he assumes to exist, though he does not demonstrate them. Němec lays much stress upon the fact that in adjacent cells the fibrils correspond on opposite faces of the wall, though the significance of this point is not clear in view of the lack of demonstrable connection through the wall. Such fibrillar structures were found in several monocotyles, dicotyles and some ferns. Inasmuch as operations for the removal of the fibrils alone were impossible, Němec caused their degeneration by sudden changes of temperature, finding afterwards the rate of propagation retarded. In roots of *Vicia Faba*, where fibrils are found only in the plerome, the severance of the plerome inhibited geotropic curvature entirely or at least above the cut, the inference being that it did so by interruption of the fibrils.

The work of Němec is certainly a careful and thorough piece of research, which will doubtless stimulate further inquiry along this line. It is not convincing, however, in its present stage. The author himself admits that impulses are transmitted by cells in which there are no fibrils, holding only that when present they facilitate propagation. If this be true they should be best developed in those organs whose reactions are quickest. Yet Haberlandt—who has already interested himself in the problem—has been unable to discover them in the vicinity of the sensitive hairs of *Aldrovandia*, the stamens of *Opuntia*, or the tendrils of *Cucurbita*. Further, it should be noted that the cell rows in which the fibrils are best developed—often those which become tracheæ—are not only an unlikely line of transmission but that no actual protoplasmic connection in them has been shown. Finally, the experiments showing retardation following interruption or disorganization of the fibrils are inconclusive because

the same conditions might inhibit the action of the real lines of propagation, whatever they are.

Further investigation is demanded for the elucidation of this interesting problem.

C. R. BARNES.

THE UNIVERSITY OF CHICAGO.

Roscoe-Schorlemmer's Ausführliches Lehrbuch der Chemie. Von JUL. WILH. BRÜHL, Professor an der Universität Heidelberg. Neunter Band, *Die Kohlenwasserstoffe und ihre Derivate oder organische Chemie;* Siebenter Theil. Bearbeitet in gemeinschaft mit EDWARD HJELT und OSSIAN ASCHAN, Professoren an der Universität Helsingfors, O. COHNHEIM, O. EMMERLING und E. VAHLEN, Privatdozenten an der Universitäten Heidelberg, Berlin und Halle, A. S. Braunschweig, Druck und Verlag von Friedrich Viewig und Sohn. 1901.

The present volume, being the seventh volume of 'Organic Chemistry,' and the ninth volume of Roscoe-Schorlemmer's 'Ausführliches Lehrbuch der Chemie,' constitutes the closing volume of this important work. It deals with three distinct topics of physiological chemistry, viz., the 'Chemistry of the Albuminous Bodies and the Constituents of Bile,' written by Dr. O. Cohnheim, of Heidelberg; 'Enzymes,' written by Dr. O. Emmerling, of Charlottenburg; 'Ptomaines and Toxines,' written by Dr. E. Vahlen, of Halle.

The section on proteids covers 331 pages, and is a well-presented statement of facts and theories bearing on the various classes of proteids of physiological interest. It is thoroughly up-to-date, and makes a valuable addition to the list of handbooks which aim to present a systematic account of the chemical nature of this important group of proximate principles.

The section on 'Enzymes' is divided into eight chapters, dealing respectively with enzymes which have a splitting action on monosaccharides, disaccharides, polysaccharides, glucosides, glycerides, etc., while other chapters or subsections deal with oxidizing and reducing enzymes, clotting enzymes, proteolytic enzymes of both animal and vegetable origin, amide-splitting enzymes, etc.

The last section of the book, by Dr. Vahlen, deals with ptomaines and toxines, and constitutes an interesting chapter on the chemistry of these products of bacterial life and growth.

The volume, as a whole, reflects great credit upon the several authors, and will undoubtedly prove of great service as a reference handbook for physiological chemists.

R. H. CHITTENDEN.

History of Geology and Paleontology to the End of the Nineteenth Century. By KARL ALFRED VON ZITTEL. Walter Scott. 1901. 16mo. Pp. xiii + 562.

This work is timely. Lyell's synopsis of views and opinions comes down to barely seventy-five years ago; Whewell's chapters on geology, though nominally covering the period down to 1855, are unsatisfactory at best; d'Archiac's work, too voluminous for the ordinary student, ends with 1859; while nearly all of the other so-called histories are histories, not of the science as a whole, but of separate branches surrounded by a framework of chapters upon other branches. The preparation of a history of geology and paleontology is no longer a simple task, and before many years it will be an almost impossible task, for the several lines of investigation now embraced under the general title of geology are fast becoming wholly independent sciences. One must welcome this history, covering the whole period to the end of the nineteenth century, prepared by one who first attained eminence in geology and afterwards turned with equal success to paleontology.

The introduction of 153 pages reviews the steps by which the science advanced. The synopsis of opinions held by ancient writers is just, with full recognition of their merits, yet showing their defects in such manner that no excuse remains for regarding the Greek philosophers as gifted beyond modern students. One hundred pages are devoted to the 'heroic age,' 1790 to 1820, in which one finds appreciative discussions of the doctrines presented by Werner, Hutton, Playfair, Humboldt, Kant and the rest, which, too often, have received either unstinted praise or unstinted censure.

The story since 1820 is told briefly, as that is given in detail beyond.

The main portion of the work contains chapters on cosmical, physiographical, dynamical and stratigraphical geology, petrography and paleontology, which are not mere narratives, not mere synopses of individual contributions: they are true histories; the opinions of investigators are given, their value discussed and their bearing upon the advancement of the science determined. The reader may detect here and there evidence of positive bias, or he may feel that the decision is inexact, but in every instance he must recognize the author's effort to maintain a judicial attitude—and it may be said that the effort has been so far successful as to place the work in a class by itself.

The statement has been made frequently that Germans are inclined to ignore the work of English-speaking peoples, but there is no trace of any such inclination in this work. Professor Zittel has been a faithful student of British and American contributions, and the references to such titles compare in number very favorably with those to works in German or French. This history will prove more than serviceable to the geologist who finds the daily accumulation of literature bearing upon his own immediate line of work so burdensome as to prevent him from keeping track of advance along other lines.

Mrs. Ogilvie-Gordon, the translator, has done her work well, for hardly a trace of German idioms remains. The text is enriched with brief biographical notices of deceased geologists and with thirteen portraits. The index of authors is complete and in a measure replaces the bibliography, which the British publisher felt compelled to omit. The index of subjects is less satisfactory, being much too brief.

JOHN J. STEVENSON.

SCIENTIFIC JOURNALS AND ARTICLES.

THE April number (Vol. III., No 2) of the *Transactions of the American Mathematical Society* contains the following papers: 'On the Small Divisors in the Lunar Theory,' by E. W. Brown; 'On the Holomorphisms of a

Group,' by J. W. Young; 'A Simple Non-Desarguesian Plane Geometry,' by F. R. Moulton; 'On the Real Solutions of Two Linear Homogeneous Differential Equations of the First Order,' by M. Bôcher; 'On a Recent Method for Dealing with the Intersections of Plane Curves,' by C. A. Scott; 'A Complete Set of Postulates for the Theory of Absolute Continuous Magnitude,' by E. V. Huntington; 'Complete Sets of Postulates for the Theories of Positive Integral and of Positive Rational Numbers,' by E. V. Huntington.

THE April number (Vol. VIII., No. 7) of the *Bulletin of the American Mathematical Society* contains the following articles: 'The February Meeting of the American Mathematical Society,' by E. Kasner; 'Note on the Transformation of a Group into its Canonical Form,' by S. E. Slocum; 'Some Applications of Green's Theorem in One Dimension,' by O. Dunkel; 'On the Forms of Quintic Scrolls,' by V. Snyder; 'Simplified Definition of a Group,' by E. V. Huntington; 'Note on Isotropic Congruences,' by L. P. Eisenhart; 'Kronecker's Lectures on the Theory of Numbers,' by G. A. Miller; 'Notes' and 'New Publications.'

THE *Botanical Gazette* for March contains the following: Professor Frederick C. Newcombe, of the University of Michigan, publishes the first instalment of a paper upon the 'Geotropism of Roots,' the result of a number of years of investigation. His results will be noted upon the completion of the paper. Miss Alice Eastwood, of the California Academy of Sciences, continues her descriptions of an interesting collection of plants from Nome City, Alaska, describing several new species and completing descriptions of many species already poorly known. John Gallatin Hall has published some interesting results of an embryological study of *Limnocharis emarginata*, a South American member of the Alismaceæ. Some of the interesting features are as follows: The tapetal cell of the ovule is cut off, but no division wall is formed, the cell disappearing early; the antipodal cell following the first division of the megasporangium nucleus remains undivided, so that there is no antip-